ABSTRACT TITLE : CORRELATION OF RADIATION DOSE TO ANAL SPHINCTER AND ANAL MANOMETRY CHANGES IN LOCALLY ADVANCED RECTAL CANCER PATIENTS UNDERGOING PREOPERATIVE LONG COURSE CHEMORADIATION THERAPY**"**

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Objective:

To generate dose volume histogram for anal sphincter and study the relation of anal manometry gradient changes with the radiation dose to anal sphincter

Methods and materials:

21 patients (5 prospectively and 16 retrospectively)with locally advanced rectal cancer who were treated with conformal radiation therapyin between the time period January 2013 – July 2015 were recruited. GTV, CTV, anal sphincter and PTV was contoured on the simulation CT. The dosimetric parameters(Mean dose,Distances from the mid point of anal sphincter to inferior border of GTV, CTV and PTV, V10,V20,V30,V40,V50) were calculated . Pressure change in resting and squeeze pressure before and after radiation therapy were correlated with the anal manometry gradient changes respectively.

Results:

There were 11(52.4%)Male and 10(47.6%))female patients. Most of the tumors were in mid rectum 13(62%) followed by upper third 7(33.3%). Common histology reported was moderately differentiated adenocarcinoma. Most of the tumors showed good response as evident by down staging of T and N. Most of the patients tolerated the treatment well . In this study, we found the mean dose of anal sphincter was 28.77 Gy.Out of 5 patients recruited prospectively, pressure measurements was recorded for three patients. Hence , we were not able to comment on the relation of manometry gradient changes and dose to anal sphincter.

Conclusion :

Anal sphincter should be contoured as organ at risk (OAR) in modernradiation techniques for treating pelvic tumors .Symptoms of anal dysfunction should be assessed subjectively and objectively and documented. Further prospective studies are required for recommending dose constraint for anal sphincter and evaluating the benefit of sphincter sparing radiation therapy in rectal cancer survivors.

Key Words: Rectal Cancer; Anal Sphincter; Anal Dysfunction; Anal Manometry